

# EQUITY RESEARCH ASSOCIATES

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Established 1876

Institutional Report

November 13, 1981

## COMMODORE INTERNATIONAL LIMITED (CBU - 40 NYSE)

<u>FY June 30</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982E</u>	<u>P/E RATIO 1982E</u>	<u>DIVIDEND RATE</u>
Earnings/Share	\$0.36	\$0.62	\$1.56	\$2.42	\$3.75	10.7x	nil
Revenues (mil.)	\$50.2	\$71.1	\$125.6	\$186.5	\$300.0		
Capitalization	\$ Million		%	Common Shares: 10,300,000			
Long-Term Debt	\$32.0		34%	Typical Daily Trading: 75,000			
Shareholders' Equity	\$61.6		66%	Return on Equity (ROE): 45%E			
	\$93.6		100%	Price Range 1981: 51-3/4 -- 24			

*E = Estimated. Note: Tax rates below U.S. rates due to foreign domicile -- 19.2% (FY 81), 20.8% (FY 80), 25% (FY 79), 34.6% (FY 78).*

### Summary and Conclusion

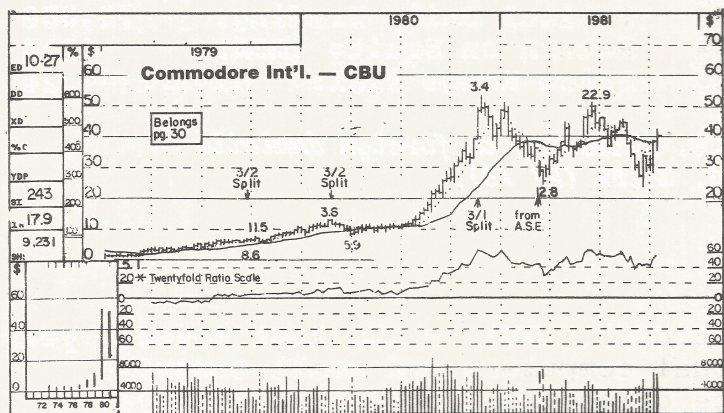
The emergence of Commodore International (CBU) in the last several years as a leading manufacturer of personal computers and small computer business systems is the consequence of several forces and events:

- The Industry -- Clearly, the personal computer/small computer business systems market is one of the most important growth markets of the 1980s. CBU is firmly established in this market as an international manufacturer and leader in the relevant technology supported by a worldwide distribution system.
- Technology -- As the only integrated manufacturer of personal computers and with a heavy commitment to research and development, CBU's position in the computer market has benefitted significantly from internal development of microprocessors. As evidence of its leadership position in solid state technology, it is noted that CBU's shipments of semiconductor devices and microprocessors to outside customers rose 85% in FY 1981 during a period of declining industry volume.



- Product -- Four years ago, CBU introduced to the computer industry the first microcomputer priced at under \$1,000, establishing thereby the basis of its present solid position at the low end of the computer market. A proliferation of new CBU products is currently underway, including the recently introduced VIC 20 priced at \$299, the World's first fully functional color computer priced competitively with the home video game market.
- Marketing -- Commodore has historically had a strong marketing position in Europe where it is a recognized leader in personal computers and small business systems. A serious commitment is now being made to improving its U.S. market share through upgrading of the distribution network and initiation of a national advertising campaign.

Commodore has defied the odds in arriving at its present position in the computer industry, having begun in 1958 as a distributor of imported typewriters and other electro-mechanical business machines, become in the early 1970s an assembler of electronic calculators and, since 1977, become a fully integrated producer of computer systems with primary manufacturing capability in semiconductors and microprocessors. This has been accomplished from a minor equity base initially (shareholder's equity was \$8.2 million four years ago) which now amounts to over \$60 million. Thus, we have today a company which is positioned in a major international growth market of the 1980s with all essential elements in place: technology, manufacturing, marketing, and capital.



For the fiscal year ending next June, ERA is estimating net earnings for Commodore of \$3.75 per share and for the following year \$5.50. For fiscal 1986 we project net at \$11 per share and a P/E ratio of 18x, setting thereby a five-year ERA price objective of 200 on the shares. Purchase of Commodore International common for aggressive growth accounts prepared to accept

a high degree of market volatility is recommended.

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### Background

Commodore International was founded in 1958 by Jack Tramiel, present Vice Chairman and Chief Executive Officer, as a marketing organization to sell imported typewriters from Czechoslovakia and various other electro-mechanical business machines. The original domicile of the company was Toronto. In the early 1960s a Toronto financier, Irving Gould, became involved in financing the company. Today, Mr. Gould is Chairman of the Board of Commodore. Their combined holdings amount to 2.8 million shares, 27% of the 10.3 million common shares outstanding.



In 1976 the company migrated the domicile of incorporation from Canada to the Bahamas. Executive offices are located in Norristown, Pa.

During the 1960s Commodore's distribution base became international in scope. In 1970 the company began to assemble calculators for sale under the Commodore label employing purchased semiconductors and other components. It was the first company to mass market a hand-held electronic calculator priced at under \$100. As manufacturers of calculator semiconductor chips became increasingly active in that market (notably Texas Instruments) it became less and less possible for non-integrated manufacturers such as Commodore to compete. In 1975 the company lost \$5 million. It was then decided to become a primary semiconductor manufacturer. That strategy was implemented through acquisition of two companies, MOS Technology, Inc. in Norristown, Pennsylvania, and Frontier Manufacturing, Inc. in Costa Mesa, California. In 1979 it acquired Micro Display Systems, Inc. (MDSI), a manufacturer of liquid crystal displays (LCDs) based in Dallas, Texas.

The emergence of Commodore as a computer manufacturer stems from MOS Technology's development of its renowned series 6500 "computer on a chip" microprocessor which is the control center of the PET computer system and of the KIM-1 microcomputer board. This chip is also employed by Apple Computer which purchases it from a second source vendor (manufactured under license from Commodore) and Atari (Warner Communications) which buys directly from Commodore.

Commodore continues to pursue a strategy of vertical integration. We anticipate that over the course of the next several years it could become engaged in the manufacture of peripheral equipment such as disk drives (i.e. add-on memory) and printers. The typical system today is sold with these items plus a modem which permits communications interface.

Commodore is structured into four primary segments as per the table at the top of page 4.

- Computer Systems (71% of fiscal 1981 sales)

Based on the primary microprocessor technology acquired in 1976 and 1977, Commodore introduced its first computer product, the PET computer in 1978. It was the first self-contained personal computer retailing for less than \$1,000. Commodore presently offers products in three categories (consumer, small business systems and the traditional "Fortune 500" market) as follows:

- (a) PET models 4016, 4032 - These are low-end computers with typewriter-style keyboards offering, respectively, 16K and 32K random access memory. These models are sold primarily to educators, students, programmers, engineers and hobbyists. A new product is being added to the low end, the VIC (video interface circuit) 20. It



<u>FY June 30</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982E</u>
	- -	- -	- \$ million -	- -	- -
Computer Systems	\$12.2	\$34.4	\$82.8	\$132.5	\$235.0
% of Revenues	24%	48%	66%	71%	78%
Semiconductor components	\$9.8	\$10.0	\$18.9	\$34.9	\$45.0
% of Revenues	20%	14%	15%	19%	15%
Consumer Products	\$19.4	\$15.9	\$11.1	\$7.6	\$5.0
% of Revenues	37%	22%	9%	4%	3%
Office equipment	\$8.8	\$10.8	\$12.8	\$11.3	\$15.0
% of Revenues	18%	15%	10%	6%	3%
Total Sales	\$50.2	\$71.1	\$125.6	\$186.5	\$300.0

\* \* \*

is priced at \$299 (\$259 discounted) and is designed for the first time user both as a computer and as a game product. It connects to any color television set or other monitor and provides 5K memory with expansion cartridges available in 3K, 8K, and 16K RAM (random access memory) increments. Software is available on tape, cartridge, and disks for applications in recreation, education and home management. The typical system to include a printer, additional memory, and a modem would come in at approximately \$1,700 retail.

- (b) CBM 8000 Series - This is a computer with typewriter-style keyboard and separate numeric pad, 80 column by 25 line display and new screen editor functions. It is offered in models 8032, with 32K RAM, and the model 8096 with 96K RAM. The language is BASIC in interactive and program modes. The CBM 8000 series is directed to the small business systems market. The basic unit retails at \$1,495 and, with peripherals, a typical system including printer, 64K add-on memory and dual "floppy" would come in at under \$4,500 at retail.
- (c) SuperPET 9000 Series - This is primarily a multi-computer language system employing a pseudo 16 bit 6809 microprocessor with 96K RAM. It can use several languages, including BASIC, FORTRAN, APL, PASCAL, and Assembler. It is priced at \$1,995 with features equivalent to the Apple II Plus costing \$4,090.

Computer systems sales in fiscal 1981 amounted to \$132.5 million of which \$32.1 million was sold in the United States. The following



table compares sales of computer systems Worldwide and in the U.S. for the last four years and estimated for fiscal year 1982:

<u>FY June 30</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982E</u>
	- - - -	- - - -	- \$ million -	- - - -	- - - -
U.S. Sales	\$5.9	\$11.2	\$20.1	\$32.1	\$80.0
% of total	48%	33%	24%	24%	34%
Foreign Sales	\$6.3	\$23.2	\$62.7	\$100.4	\$155.0
% of total	52%	67%	76%	76%	66%
Total Sales	\$12.2	\$34.4	\$82.8	\$132.5	\$235.0

Relatively early in its history, Commodore established a strong reputation for its products in Europe and created a solid distribution network. As a consequence of this and the fact of a less competitive environment in Europe, computer sales to that market have grown at a faster rate than domestically. This is evidenced in the table above by the increasing portion of shipments going to foreign markets. In FY 1981 corporate-wide sales in Europe totaled \$85.6 million of which we estimate at least \$80 million constituted computer sales, thus accounting for an estimated 80% of foreign computer sales. The balance of foreign computer sales (i.e. \$20 million) went to other foreign markets, primarily Asia (and including Japan).

We estimate that the driving force of ERA's projected growth for computer sales from \$132.5 million to \$235 million in fiscal 1982 (a projected 77% increase in sales) will be the VIC 20. Priced at \$299, we believe there is a large market for computers at the low end. It is priced well below the two cheapest available computer systems, the Radio Shack TRS 80 at \$399 and the Atari.400 system at \$475. At \$299, and offering game capability, the VIC 20 is encroaching upon the large game market presently dominated by Atari with its VCS which in 1981 will probably sell over 3 million units and the Mattel "Intellivision" at \$299 which we estimate will sell over 500,000 units. Neither of these products has computer capability. The VIC 20 can thus be sold as either (a) a low-priced computer with game capability "thrown in for free", or (b) a competitively priced game product with computer capability "thrown in for free". Production is currently at a rate of 20,000 monthly (240,000 annually) and is scheduled to go to 40,000 monthly (480,000 annually) by the end of FY 1982. The wholesale price is \$210 which would place a sales value on current production of over \$4 million monthly (\$48 million annually). The reason Commodore has been able to come in at such a low price is that through microminiaturization the number of components in the VIC 20 is only 20 in number versus some 50 for machines of equivalent capability.

#### Personal Computers/Small Business Systems: 1981-1986

The personal computer/small computer business systems industry is generally agreed to be completing its fourth year as an identifiable segment of the computer industry. For purposes of this discussion, we



will refer to the personal computer market as including the significant portion of sales going for business applications.

The key to development of the personal computer market has been the introduction of low-cost microprocessor technology in RAM (random access memory) and ROM (read only memory) format. RAM is employed as primary memory and ROM as add-on memory. In addition, many systems employ "floppy disks" for inexpensive data storage.

The personal computer market in 1981 is estimated by ERA at \$2.5 billion, defined as systems selling for \$15,000 or less. We project that the market will grow 50% in 1982 to \$3.8 billion and by 40% a year after that such that by 1986 industry revenues should exceed \$14 billion at retail (\$9 billion wholesale).

It is believed that some one million personal computers will be sold in the U.S. in 1981 led by Apple Computer at the upper end of the market and Tandy Corp. at the low end. IBM has now entered the upper end with its recently introduced product.

Next to Tandy at the low end of the market is Commodore followed by Atari. Others in the market include Hewlett-Packard, Texas Instruments and Xerox. Conventional wisdom had it that TI's entry into personal computers several years ago would quickly place it in a leadership position given its successful experience in the calculator market, but this did not happen. As for IBM's recent entry, the standard argument is that its entry "authenticates" the market and we believe that argument has validity.

IBM is purchasing components from outside vendors and is therefore not likely to be competitive at the low end of the market even if such were the company's strategy (which it isn't). Note that IBM employs over 300,000 people and, as one analyst recently commented, a substantial portion of its first year production (est. 50,000-75,000 units) will be purchased by its own employees.

#### ● Semiconductor Components (19%)

MOS Technology (Norristown, PA): Isoplanar silicon gate NMOS production process. Manufactures 6500 series microprocessors and peripherals, 16K and 128K ROMS, 4K and 8K static RAMS, video and sound interface products and single-chip microcomputer circuits.

Frontier Manufacturing (Costa Mesa, CA): Metal gate CMOS and isoplanar silicon gate CMOS production processes. Manufactures watch and clock circuits, CMOS 6500 series microprocessors and CMOS ROMS.

Optoelectronics (Dallas, TX): Plastic seal liquid production process. Manufactures watch and clock displays, calculator displays, various small area consumer displays and large area consumer and industrial displays.

Commodore Hong Kong: Final dye preparation and integrated circuit assembly and testing.



There are two elements to Commodore's position which would appear to place it in a strong competitive position at the low end of the market as it develops over the next 3-to-5 years. First of all, in contrast to all other U.S. producers, CBU is integrated in semiconductor/microprocessor manufacturing and has had a history of developing unique product for the market. Its 6502 microprocessor introduced in 1974 is still an industry standard. Its VIC 20 is based on proprietary microprocessor technology and we believe that one or more important new products may be introduced over the next year, again employing proprietary microprocessor technology.

The company currently has under development a number of new component products. At Norristown where NMOS products are produced, additions to the 6500 microprocessor series are underway, including a new CPU with random access memory, various interface circuits, a CRT controller and a communication interface adapter. The 6500/1, a single-chip microcomputer, will be introduced this year. At Costa Mesa, where CMOS products are made, nine new watch products are being introduced including 8-digits, tunes, animation and analog. Several units in the 6500 series are being replicated in CMOS technology which offers the advantage of low power usage. By the end of FY 1982 capacity at Norristown will be doubled, capacity at Frontier will be tripled and capacity at Optoelectronics will be quadrupled.

Clearly, Commodore has demonstrated its strength in components with an 85% increase in shipments to outside customers last year and a further gain projected for FY 1982 of 30%. Results for both years, as projected, were realized in the face of declining industry volume. Commodore claims that it will ship more 64K ROMS than any vendor in 1981, that its 6500 microprocessor family is the highest volume 8-bit microprocessor on the market, that it is the highest volume U.S.-based manufacturer of LCDs (liquid crystal displays) and that, during the past year, it has increased its market share in ROMS, 8-bit microprocessors, CMOS watch chips and LCD watch displays. It projects further gains in market share in each of these product categories over the course of the next year. Among new product introductions scheduled is a 16-bit microprocessor priced at under \$10 versus a present market for equivalent units at over \$50. Given these considerations, it may be that our estimate of \$45 million in shipments to outside customers for the components division in FY 1982 will prove conservative.

• Consumer Products (4%) and Office Equipment (6%)

As recently as 1977, consumer products accounted for 71% of Commodore's revenues. This business then consisted of the manufacture of electronic calculators and LED (light emitting diode) watches. This business has progressively declined as evident from the table on page 4 both in absolute and relative terms. In fiscal 1980 the company added an electronic thermostat product, a programmable, digital device. For the current fiscal year we project consumer product revenues at \$5 million, down from \$7.6 million in FY 1981 and \$33 million in 1977. It appears likely that for the foreseeable future, as the company's energies and resources are directed to computers, consumer products will remain a nominal segment of CBU's business.



Commodore manufactures what we believe is the largest selling line of budget priced steel office furniture in Canada and certain other metal products. As the company introduced its line of computer products, these facilities were employed to manufacture housings for the original PET computer line. In the past two years capacity has been freed up as the Computer Division has shifted to plastic housings and, meanwhile, production has been automated with the completion of a \$2.5 million capital program. We are projecting a 30% increase in revenues of the Office Equipment Division in FY 1982 but a decline in volume relative to total corporate sales from 6% to 3%.

### Perspective 1986

Commodore has not achieved its position as a meaningful "player" in the personal computer market by happenstance. It has had the advantage of certain fundamental strengths which have been the basis of its success. These factors, moreover, are basic in nature such that it appears reasonable to believe that the company can sustain its position in the market over the next five years and possibly even improve upon it.

The worldwide data processing market in 1981 is estimated by Arthur D. Little, the consulting firm, at \$75 billion. The personal computer portion of the market is believed to be \$2.5 billion which, if these figures are correct, would indicate that personal computers account for approximately 3% of the industry. A.D. Little further estimates that U.S. manufacturers account for 80% of the industry worldwide and the Japanese about 10%. It is generally accepted that the personal computer business will grow by 30-to-50% per annum over the next five years, and if one applies the low end of that range as a growth factor for Commodore, one arrives at a 1986 revenue estimate of \$750 million and a net earnings estimate of over \$100 million, applying reasonable margins and a 33% tax rate.

So what are these basic strengths which we believe will carry the company forward over the next five years?

- (a) Integration -- In contrast to Apple, Tandy, Atari and even IBM, in personal computers, Commodore is integrated in solid state technology which is to say that it produces its own semiconductors and microprocessors. What is important about this is that it produces very good solid state technology. As discussed above, it has been a pacesetter in the development of microprocessors for the personal computer market and it appears to have continuing momentum in this respect. A recent example is the VIC 20 which is based on proprietary, internally developed microprocessor technology and, given the substantial commitment to product development and expansion of solid state facilities as discussed previously, we would expect additional advanced semiconductor and microprocessor products to be forthcoming in the foreseeable future.
- (b) Distribution -- The general view of Commodore is that it has a strong distribution network in Europe and a weak one in the U.S. This would appear to be a realistic assessment. The company is in the throes of a major effort to improve its distribution and



service in the U.S. and is supporting that by a \$6 million advertising program which was only recently initiated. It has employed as a company "spokesman" to the public William Shatner who is widely recognized as a "futurist" for his role as Captain James Kirk, Commander of the Starship Enterprise on the TV series "Star Trek". Shatner will be promoting the full line of Commodore personal computer products. These will be advertised in consumer, trade, educational and hobbyist magazines as well as the general press and on national radio. In respect to service, an agreement has been entered into whereby TRW, the largest third party computer service organization in the U.S., will service all Commodore machines sold in the U.S.

Our analysis concludes that Commodore's commitment to improving the dealer network supported by a large advertising budget and service support will be effective and that Commodore will accordingly improve market share in the United States consistent with its experience abroad. Incidentally, Commodore's relatively greatest strength has been the United Kingdom market where we believe it occupies a number one position achieved under the direction of Christopher "Kit" Spencer. Mr. Spencer was recently brought to the U.S. to oversee marketing in this country.

- (c) Software -- It is generally believed that the success of Apple Computer in the personal computer business has in good part been a function of the large volume of software available to operate its equipment. This appears to be a fair assessment. In contrast, Commodore's strength in the market has been to a greater degree a function of its excellent, value-engineered hardware. Again, however, as with the question of U.S. distribution, Commodore appears to be making large strides forward in internal and external development of software for its systems. There are presently available over 1,000 programs for its PET and CBM lines in seven basic categories: business, word processing, utilities, engineering aids, personal aids, games and education. The universe of software is continually being expanded through internal development and through generation by the large population of Commodore systems users which is estimated to amount to more than 250,000. Information on these programs is available in a "Commodore Software Encyclopedia" which is periodically updated.
- (d) Product Range and Compatibility -- With the recent introduction of the VIC 20, Commodore now covers the complete range of potential customers from the very low end home user where price competitiveness with the game market is important to the PET 4000 series which is oriented to the individual user to the CBM 8000 series which is geared to the small business market to the SuperPET with multi-level language capability geared to be comparable with the traditional computer market. It has, moreover, placed emphasis on compatibility of peripherals within and between its various product categories.



Over the longer term, the greatest potential threat to Commodore is Japanese competition which proved so disastrous to the calculator market of the mid-1970s. There appears to be an enormous market for personal computers in Japan and as that market matures, Japanese producers will have the advantage of amortizing development costs over a wide base and be able to be highly competitive in international markets. This is the conventional wisdom and not an unrealistic point of view. Commodore's strategy is to assume that the Japanese will have an important share of the personal computer market by the mid-to-late 1980s but that the thrust of Japanese competition will be felt primarily at the upper end of the market (Apple, IBM, Xerox, etc.) where there is greater price flexibility.

Even assuming a strong Japanese market presence, we do not believe that the personal computer market will evolve as a replay of the calculator wars of the early 1970s. There is too much in the way of know-how required, software support needed and other support services required in the proper application of personal computer systems to conclude that the marketplace would become price sensitive to the degree that occurred in the calculator market. A personal computer system for home application falls in the category of a consumer durable purchase equivalent to the purchase of a substantial stereo system or even an automobile. It is a very distinct market from that of the \$19 hand-held calculator and we believe that this underlying difference will establish and sustain the character of the personal computer market on terms where performance and service will be overriding considerations for the consumer.

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Operating Analysis

<u>June 30</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982E</u>
	\$ million			
Sales	\$71.1	\$125.6	\$186.5	\$300.0
Cost of Goods	48.0	75.0	103.7	165.0
% of Sales	67.5%	59.7%	55.6%	55.0%
Selling Expense	\$ 4.5	\$ 11.2	\$ 25.5	\$ 45.0
% of Sales	6.3%	15.8%	13.7%	15.0%
G&A	\$ 4.9	\$ 11.3	\$ 14.2	\$ 21.0
% of Sales	6.9%	9.0%	7.6%	7.0%
R&D	\$ 3.6	\$ 6.6	\$ 8.4	\$ 12.0
% of Sales	5.1%	5.3%	4.5%	4.0%
Interest	\$ 2.1	\$ 3.2	\$ 3.9	\$ 4.5
% of Sales	3.0%	2.5%	2.1%	1.5%
Pretax Income	\$ 8.0	\$ 18.3	\$ 30.8	\$ 52.5
% of Sales	11.3%	14.6%	16.5%	17.5%
Tax Rate	25.0%	20.8%	19.2%	25.7%
Net Income	\$ 6.0	\$ 16.2	\$ 24.9	\$ 39.0
% of Sales	8.4%	12.9%	13.4%	13.0%
Earnings/Share	\$0.62	\$ 1.56	\$ 2.42	\$ 3.75

Comment: As per the above table, ERA is estimating a marginal improvement in gross margins for FY 1982, an increase in selling expense to 15% of sales from 13.7% reflecting the increase in U.S. advertising expenditures, modestly lower other expenses as a percentage of sales, higher pretax margins by one point (17.5% vs. 16.5%), and a higher tax rate at 25.7% reflecting a projected higher proportion of sales and profits to be generated in the U.S.

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*Price: \$65 per copy.*

*Note: Additional information with respect to the ERA Recommended List is available on written request and duplicate copies at a fee basis.*

The preceding analysis and other ERA analyses generally set long-term price objectives for shares recommended. Such target objectives are based on assumptions, the reliability of which cannot be assured. These assumptions include (1) a stable general investment environment, (2) realization of ERA's projections as to revenues and earnings, and (3) a pattern of relationships between market price and earnings or book value consistent with past experience. No assurance can be given as to the validity of ERA's valuation assumptions or the accuracy of its forecasts with respect to the companies reviewed herein or any other companies recommended for investment by ERA.

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